

Gamma Knife® Perfexion™ Upgrade Course Outline

Washington Hospital Gamma Knife Center
2500 Mowry Ave.
Fremont, CA 94538

3-Day Course

Day 1

Location of first three lectures: Taylor McAdam Bell Neuroscience conference room

- 7:45 – 8:00** Welcome and Introduction
- 8:00 – 8:45 (0.75) Lecture 1:** Evolution and Development of Radiosurgery (Dr. Larson)
- 8:45 – 9:15 (0.5) Lecture 2:** WHHS experience with Perfexion™ (Dr. Kunwar)
- 9:15 – 10:00 (0.75) Lecture 3 (lecture hall):** Technical description of the Perfexion™, emphasizing the differences between the Perfexion™ and earlier Gamma Knife models, and how these differences lead to improved work flow. In particular, the new collimator system will be described including source configuration and sector design. (Dr. Petti)
- 10:00 – 10:15** *Coffee Break*
- 10:15 – 10:45 (0.5) Demonstration 1:** Tour of Perfexion™ suite and demonstration of operation of the Perfexion™ Gamma Knife® unit
- 10:45 – 11:15 (0.5) Demonstration 2 (Perfexion™ suite): Pre-planning workflow for Perfexion™** In advance, we will have attached the Leksell head frame to our 3D anthropomorphic skull phantom (CIRS Model 603) and we will have obtained both a CT and MRI scan of the phantom. We will demonstrate:
- a) “Frame cap” measurement, which is new with the Perfexion™
 - b) Skull radii measurements
 - c) How to attach MR and CT fiducial box to frame
- 11:15 – 11:45 (0.5) Demonstration 3 (Perfexion™ suite):** Demonstrate basic features of LGP8.0/8.02 on large screen (P. Petti or S. Lohman)
- 11:45 – 12:30 (0.75) Exercise 1: Workflow for treatment planning**
- a) Enter skull radii for CIRS phantom (determined in demonstration 2)

- b) Develop a treatment plan for the simulated lesion in the CIRS phantom
- c) Approve and export a plan developed by one of the attendees to the Perfexion™ Unit. The plan will demonstrate various basic features of the Perfexion™ system.
- d) Set up the phantom on the Perfexion™ unit, practice docking and undocking the phantom and deliver the planned treatment.

12:30 – 13:15 *Lunch (Taylor McAdam Bell Neuroscience conference room)*

Lectures 4 and 5 will be held in Taylor McAdam Bell Neuroscience conference room

13:15 – 13:45 (0.5) Lecture 4: Imaging Recommendations: Types of images required for specific sites and the use of image fusion and image co-registration in treatment planning. (Dr. Kunwar)

13:45 – 14:15 (0.5) Lecture 5: Treatment planning for the Perfexion™ : Isodose distributions for composite shots and for shots with sector blocking. Comparisons between Perfexion™ and Model C treatment plans (Dr. Petti)

14:15 – 14:30 Break

14:30 – 17:00 (2.5) Exercise 2: (lecture hall or GK planning area): Treatment planning using the 10 cases that Elekta used in their Technical Training Course in Stockholm and/or additional cases that we have planned here at Washington Hospital that are specific to the Perfexion™. These cases will demonstrate all facets of treatment planning, including planning for multiple metastases, co-registration of imaging studies, image fusion, composite shots, and dynamic sector blocking.

Total CME credit for Day 1 = 7.75 hrs

Day 2

Location for lectures 6 and 7: Taylor McAdam Bell Neuroscience Conference Room

8:00 – 8:45 (0.75) Lecture 6: Clinical lecture - Brain Metastases (Dr. Larson)

8:45 – 9:30 (0.75) Lecture 7: Clinical lecture - Benign Brain Tumors (Dr. Kunwar)

9:30 – 9:45 *Coffee Break (served in Taylor McAdam Bell Neuroscience Conference Room)*

- 9:45 – 10:15 (0.5) Demonstration 4:** TPS Administration (Gamma Knife Suite): Roles of “planner,” “physicist” and “administrator.” Storage and retrieval of patient data will also be demonstrated on large screen in GK suite (P. Petti or S. Lohman).
- 10:15 – 10:45 (0.5) Demonstration 5: Pre-planning, Re-treatment and follow-up** features of LGP 8.2 – demonstrate on large screen in GK suite (P. Petti or S. Lohman).
- 10:45 – 11:15 (0.5) Exercise 3: (Gamma Knife Suite): Clearance Check**
Procedure: Practice clearance check using test run procedures provided with the Perfexion™ system
- 11:15 – 11:45 (0.5) Exercise 4: (Gamma Knife Suite): Clearance Check Example:** Attendees will be assigned a treatment plan that includes multiple gamma angles and clearance checks. This plan will be exported to the Gamma Knife, and the attendees will have the opportunity to practice changing gamma angles and perform clearance checks.
- 11: 45 – 12:00 (0.25) Exercise 5: (Gamma Knife Suite): QA procedure for clearance check tool:** Attendees will practice executing the procedure provided with the Perfexion™ for performing routine QA on the clearance check tool.
- 12:00 – 12:45** *Lunch served in Taylor McAdam Bell Neuroscience conference room*
- 12:45 – 13:15 (0.5) Lecture 8:** (Taylor McAdam Bell Neuroscience conference room) Radiation Safety Features of Perfexion™ including a discussion of reduced extracranial doses (Dr. Petti)
- 13:15 – 14:00 (0.75) Demonstration 6** (Gamma Knife Suite): Safety features of Perfexion™, including “treatment stop,” “treatment Pause,” manually moving the couch, how to manually place the sectors in the home position and manually close the shielding doors (Dr. Petti)
- 14:00 – 14:15** *Break*
- 14:15 – 15:15 (1.0) Demonstration 7** (Gamma Knife Suite): New QA features including diode focus test tool. The discussion of QA procedures will be aimed primarily at physicists. Physicians may elect to continue treatment planning exercises (Drs. Petti, Larson and Kunwar)
- 15:15 – 17:00 (1.75) Exercise 6:** Continue treatment planning exercises

Total CME credit for day 2 = 7.75 hrs

Day 3

7:30 – 15:00 Attendees will observe the entire treatment process, from frame placement to treatment on the Perfexion™.

Coffee will be provided in the Gamma Knife Suite and Lunch will either be served in the Gamma Knife planning area or in the Taylor McAdam Bell conference room.

Following the patient treatment physicians and physicist will split up:

Physicians will be given the opportunity to observe the weekly Gamma Knife Case conference at WHHS. Questions and discussion will be encouraged.

Physicists will:

- a) Become acquainted with the “Test Run” procedures provided in the Perfexion™ system that have not already been discussed or demonstrated.
- b) Discuss/Compare QA procedures performed with new Physics Tool Kit including new film holder
- c) Review QA procedures in more detail (if needed).
- d) Continue treatment planning (if needed).

Total CME credits for Day 3 = 6.25 hrs